THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte A.K. (TONY) SCHULTZ

Appeal No. 1997-4397
Application 08/395,698[1]

HEARD: February 8, 2000

Before BARRETT, FLEMING, and BARRY, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed February 28, 1995, entitled "In-Ground Vapor Monitoring Device And Method."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-13.

We reverse.

BACKGROUND

The invention is directed to an in-ground vapor monitoring device and method.

Claim 1 is reproduced below.[2]

> 1. An in-ground vapor monitoring device for use with a drilling rig including a hollow stem auger and drill rod, said vapor monitoring device including:
>
> a swivel assembly including:
>
> a swivel body having a central passageway formed therethrough;
>
> an outlet port formed in said swivel body and opening onto the surface thereof for connection to a vapor analyzer; and
>
> a first outlet channel formed in said swivel body and connecting said outlet port and said central swivel passage for fluid communication therebetween; and
>
> an auger plug insertable into an end of said auger and including:
>
> an auger plug body having a central auger passage formed therethrough;

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[2] Appellant may wish to change the word "unto" in the "inlet port" limitation to "onto" to be consistent. The amendment filed July 6, 1996, (Paper No. 5) changed the first occurrence of "unto" to "onto," but not the second.

an inlet port formed in an operational end of said auger plug body and opening unto the surface thereof;

an inlet channel formed in said auger plug body for connecting said inlet port and said central auger passage for fluid communication therebetween; and

a vapor filter disposed in said inlet channel proximate said inlet port, wherein the in-ground vapors may be continuously drawn up through said inlet port and into said vapor monitoring device.

The Examiner relies on the following prior art references:

Johnston et al. (Johnston)	2,153,254	April 4, 1939
Sorensen	5,337,838	August 16, 1994

Claims 1-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorensen and Johnston.

We refer to the Final Rejection (Paper No. 6) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 12) (pages referred to as "EA__") for a statement of the Examiner's position and to the Appeal Brief (Paper No. 11) (pages referred to as "Br__") for Appellant's arguments thereagainst.

OPINION

The obviousness issue is whether the combination of Sorensen and Johnston suggests continuously monitoring

in-ground vapors while the drill is rotating. The claimed subject matter permits continuously extracting vapor samples and sending them to the surface while the drill is rotating due to (1) the continuous passage between the end of the auger plug body and the outlet port of the swivel assembly, and (2) the swivel assembly which allows fluid communication between the rotating drill string and the stationary vapor analyzer.

It is noted that claim 1 recites two pieces of a vapor monitoring device: (1) a swivel assembly; and (2) an auger plug. These two pieces are recited to be "for use with a drilling rig including a hollow stem auger and drill rod" (emphasis added) (claim 1 preamble) and the auger and drill rod are not positively recited in the claim body. Thus, claim 1 is not directed to the entire apparatus shown in Figure 1; compare this to claim 8 which recites an auger connected to the drill rod. Neither claim 1 nor claim 8 recites that the swivel assembly and auger plug are connected to a hollow drill rod 8 as shown in Figure 1.

We first look at the Examiner's interpretation of the term "continuously." The Examiner states that "Sorensen prefers 'continuous' drawing of fluid to the surface in the

sense that the taking up of fluid step is part of a continuously repeated series of steps" (FR3, emphasis omitted) and that "clearly, the steadily repeated pumping action of the Sorensen device is 'continuous', even if it is not steady" (EA5). We disagree. "Continuous" means "uninterrupted," not periodic.

It is clear that Sorensen does not operate continuously. Sorensen discloses a two-step process of analyzing samples. First, a sample is drawn into and analyzed in a sample chamber 18 which is detachably mounted in the drill string during drilling, and which contains a plurality of electrical probes 28 for in situ analysis and transmission of the results to an instrument and control unit 9 on the surface. Second, the samples themselves are pumped up to the ground surface for a second analysis. Sorensen discloses that this process may take place at short intervals (col. 2, lines 49-50; col. 7, line 21), indicating that there is not a continuous flow of sample.

However, the Examiner makes the argument that "the use of the word 'may' [in the "wherein" clause of claim 1] allows the claimed limitation to be met by any device which IS CAPABLE OF

continuous operation, whether or not the preferred use of that device is in fact continuous" (EA4). We agree that if the structure of Sorensen has a continuous passage structure that inherently (i.e., without modification) would permit continuous operation, the "wherein" clause of apparatus claims 1 and 8 would be met. On the other hand, if Sorensen requires modification to provide continuous operation, it would be necessary to provide some motivation. See In re Mills, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) ("While Mathis' apparatus may be capable of being modified to run the way Mills' apparatus is claimed, there must be a suggestion or motivation in the reference to do so."). Method claim 13 requires a step of "continuous" operation which is not disclosed in Sorensen and, so, is not met. Sorensen discloses that when the pressure in air line 31 is relieved, a new pore gas/liquid sample penetrates into the chamber 18 and its extension 20, following which the next working cycle is repeated (col. 7, lines 18-28). Since there appears to be free flow from the chamber 18 into extension 20, it appears the downhole end of the apparatus in Sorensen permits continuous operation.

The real question is whether Sorensen teaches or suggests a swivel joint that permits continuous monitoring while the drill is rotating. The Examiner finds that "Sorensen also either inherently uses or at least suggests the use of a swivel connection" (EA5). The Examiner relies on column 7, lines 20+, for the suggestion that the device extracts samples while the drill bit is rotating and sends them to the instrument and control unit while the drill bit is rotating. Column 7, lines 18-23, state: "When the pressure in air line 31 is relieved, a new pore gas/liquid sample penetrates into the sample chamber 18 and its extension 20, following which the working cycle described above is repeated, and, as will be appreciated, this may take place at short intervals and without interrupting the drilling process . . . ." The Examiner also states (FR5-6) that Sorensen strongly suggests a swivel connection at column 6, lines 17-19 and 61-65. Column 6, lines 17-21, discloses: "The sample chamber extension 20 is connected with the surface of the ground via an air line 31 and a liquid line 32, respectively, which are connected via the water/air sluice 7 and the pipe or hose connections 10 with the instrument and control unit 9."

Column 6, lines 61-65, states: "whereby its content of water is displaced up through the liquid line 32 and further on from this via the water/air sluice 7 to the instrument and control unit 9 . . . ."

Appellant argues that "a structure capable of making a fluid connection between a rotating drill and a stationary analyzer is not disclosed in [Sorensen] because it would be unnecessary to the operation of Sorensen's device" (Br6-7). For example, because Sorensen discloses sending samples to the surface in cycles at short intervals (col. 7, lines 18-23), it does not teach or suggest the need for continuous monitoring. Appellant argues that there is no evidence that the samples are (or are capable of being) pumped up while the drill is rotating (Br7): "While Sorensen does say that this sampling may be done 'without interrupting the drilling process,' it is clear from this statement that he means the drill string does not need to be disassembled or removed from the well." Appellant argues (Br8) that the Examiner erred in finding that Sorensen disclosed continuous drawing up of vapor while the rig is rotating and compounded the error by the circular

reasoning that a swivel joint must be there to provide continuous monitoring while the rig is rotating.

We are not persuaded that Sorensen fairly discloses or suggests a swivel-type joint that permits continuous withdrawal of vapors while the drill rig is rotating. It is difficult to discern the extent of the teachings of Sorensen after reading Appellant's disclosure without the use of hindsight. However, since the swivel assembly is said to be Appellant's invention, more than mere speculation about what is disclosed is required to establish a prima facie case. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967) (it is improper to resort to speculation or unfounded assumptions to supply deficiencies in the factual basis for a rejection).

Because Sorensen states that the working cycle is repeated, the statement that monitoring may take place at short intervals and "without interrupting the drilling process" does not unambiguously imply (as the Examiner assumes, FR6) that fluid is continuously conveyed through line 32 to the unit 9 through a swivel-type connection. Appellant has a valid point that "without interrupting the drilling

process" can mean without the drill string needing to be disassembled or removed from the well. This interpretation has support in the background of the invention which describes that prior art U.S. Patent 4,669,554 required pulling the ram with the sample out of the formation.

The fact that the air line 31 and liquid line 32 are connected via the sluice 7 to the instrument and control unit 9 does not say anything about the nature of the sluice connection. The Examiner states that "[g]iven the ubiquitous presence of such connections in oilfield equipment, the Examiner suspects that this omission stems not from the novelty of the connection, but instead from its universal familiarity" (EA5; see also EA13 referring to the "ubiquitous swivel-type joint"). This appears to be nothing more than speculation because the Examiner has not provided any evidence that swivel-type fluid joints were well known in drilling equipment; such evidence would have been highly relevant to the rejection. As far as we are aware, the term "sluice" does not have any known meaning that would suggest a swivel connection that permits continuous fluid flow and the Examiner has not attempted to establish one. We attach a copy of the

definition of sluice from Knight's American Mechanical Dictionary (Hurd and Houghton 1876) and a copy of U.S. Patent 5,341,966 to Blankmeiser et al. which shows a cellular rotary sluice. Neither shows a continuous rotary to stationary connection. Since the drilling machine in Sorensen transmits its rotary motion to the auger bit 1 via power transmission shaft 5 which extends down through the water/air sluice 7 and is connected to bit 1, it is not apparent how lines inside the auger can be connected to a stationary box outside the auger.

Lastly, we come to Johnston. The Examiner finds that "Johnston et al. exemplify prior art means for connecting passages inside a rotating drill string to stationary outside equipment . . ." (FR2-3) and considers "Johnston et al. merely to illustrate an example of the ubiquitous swivel-type joint" (EA13). Appellant argues (Br12-13):

> The combination of dome 37 and vent pipe 40 of Johnston appears to be capable of passing vented gas into the atmosphere while the drill is rotating. Thus, Johnston et al. does disclose a primitive form of a swivel connection. However, Johnston et al. contains no disclosure, teaching or suggestion of actually doing anything with this vented gas, and it simply escapes into the atmosphere.
>
> No one of skill in the art would even think of combining the "swivel body" taught by Johnston et al.

with the Sorensen device without the hindsight benefit of having read Appellant's specification.

We have read Johnston and find no teaching that the drill string is intended to rotate while the dome 37 of the sound pickup unit 31 is over the open end of the drill string. The sound pickup unit 31 is placed over the end of a stationary drill string during a test to measure fluid flow by the noise produced. Since the sound pickup unit is mounted to drill string the dome 37 cannot rotate relative to the drill string. If this is the best evidence that can be produced to show a swivel-type joint, then we must question the Examiner's finding that swivel-type joints were "ubiquitous" in the drilling art and that this is the reason no details are provided in Sorensen.

In summary, the Examiner has failed to establish that the combination would have made obvious a swivel-type assembly for permitting continuous vapor monitoring while the drill is rotating and has failed to establish a prima facie case of obviousness. The rejection of claims 1-13 is reversed.

REVERSED

LEE E. BARRETT Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)	

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